

What is claimed is:

1. A HMM modifying method, comprising the steps of:
 - a) performing Viterbi decoding for pattern classification;
 - b) calculating misclassification measure using discriminant function;
 - c) obtaining modified misclassification measure for a weighted loss function;
 - 10 d) computing a delta coefficient according to the obtained misclassification measure;
 - e) modifying HMM weight according to the delta coefficient; and
 - f) transforming classifier parameters for satisfying 15 a limitation condition.

2. The method as recited in claim 1, wherein the weighted loss function $\bar{d}_i(X; \Lambda)$ is defined as:

$$\begin{aligned}\bar{d}_i(X; \Lambda) &= d_i(X; \Lambda) - k \cdot g_i(X; \Lambda) \\ &= -(1+k) \cdot g_i(X; \Lambda) + \log \left[\frac{1}{N} \sum_{j=1, j \neq i}^N \exp[g_j(X; \Lambda) \eta] \right]^{\frac{1}{\eta}}\end{aligned}$$

- 20 , wherein i and j is positive integer number and i representing a number of class, $g_i(X; \Lambda)$ is the discriminant function for class i with Λ being a set of classifier parameters and X is an observation sequence, N is an integer number representing class models and k is positive 25 number representing the number of HMM state.

3. The method as recited in claim 1, wherein the delta coefficient Δw_i is obtained based on the discriminant function and the weighted loss function defined as:

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$$\Delta w_i = \frac{d_i(X; \Lambda)}{-g_i(X; \Lambda)} ,$$

wherein $d_i(X; \Lambda)$ is the weighted loss function and $g_i(X; \Lambda)$ is the discriminant function, Λ is a set of classifier parameters, X is an observation sequence, i is positive integer number representing a number of class.

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4. The method as recited in claim 1, wherein in the step f), the classifier parameter is transformed by the limitation condition, which a summation of HMM weights in a HMM set is limited to a total number of HMM in the HMM set, 15 which is defined as:

$$\sum_{i=1}^M w_i = M, \quad 0 < w_i < M ,$$

wherein M is positive integer number representing the number of HMM.

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5. The method as recited in claim 1, wherein in the step a), the discriminant function is obtained by a viterbi decoding.